

The accumulated monthly departures from normal temperatures from January 1 to the end of the current month are given in the second column of the following table, and the average departures are given in the third column, for comparison with the departures of current conditions of vegetation from the normal conditions.

Districts.	Accumulated departures.		Districts.	Accumulated departures.	
	Total.	Average.		Total.	Average.
New England	+ 0.1	0.0	Middle Atlantic	- 5.5	- 0.6
Upper Lake	+ 4.9	+ 0.5	South Atlantic	-13.4	- 1.5
North Dakota	+ 6.2	+ 0.7	Florida Peninsula	-12.8	- 1.4
Upper Mississippi	+ 3.4	+ 0.4	East Gulf	-14.9	- 1.7
Missouri Valley	+ 5.9	+ 0.7	West Gulf	-14.2	- 1.6
Northern Plateau	+ 1.0	+ 0.1	Ohio Valley and Tenn.	- 8.0	- 0.9
			Lower Lake	- 1.5	- 0.2
			Northern Slope	-10.0	- 1.1
			Middle Slope	- 2.7	- 0.3
			Abilene (southern Slope) ..	-13.7	- 1.5
			Southern Plateau	- 7.1	- 0.8
			Middle Plateau	-12.1	- 1.3
			North Pacific	- 3.0	- 0.8
			Middle Pacific	- 4.9	- 0.5
			South Pacific	- 8.9	- 1.0

MOISTURE.

The quantity of moisture in the atmosphere at any time may be expressed by means of the weight contained in a cubic foot of air, or by the tension or pressure of the vapor, or by the temperature of the dew-point. The mean dew-points for each station of the Weather Bureau, as deduced from observations made at 8 a. m. and 8 p. m., daily, are given in Table I.

The rate of evaporation from a special surface of water on muslin at any moment determines the temperature of the wet-bulb thermometer, but a properly constructed evaporimeter may be made to give the quantity of water evaporated from a similar surface during any interval of time. Such an evaporimeter, therefore, would sum up or integrate the effect of those influences that determine the temperature as given by the wet bulb; from this quantity the average humidity of the air during any given interval of time may be deduced.

The sensible temperature experienced by the human body and attributed to the atmosphere depends not merely upon the temperature of the air, but equally upon the dryness, the velocity of the wind, and the suddenness of atmospheric changes. The temperature of the wet-bulb thermometer as obtained by the whirling apparatus used in the shaded shelter corresponds to the temperature felt by persons standing in the shade of trees or houses, exposed to a natural breeze of at least 6 miles per hour. This temperature and its depression below the dry bulb are the fundamental data for all investigations into the relations between human physiology and the climate. In order to present a monthly summary of the atmospheric conditions from a hygienic and physiological point of view, Table VIII has been prepared, showing the maximum, minimum, and mean readings of the wet-bulb thermometer at 8 a. m. and 8 p. m., seventy-fifth meridian time.

PRECIPITATION.

[In inches and hundredths.]

The distribution of precipitation for the current month, as determined by reports from about 2,500 stations, is exhibited on Chart III. The numerical details are given in Tables I, II, and III.

The precipitation was heaviest, 4.00 to 10.00 in the upper Lake Region, 4.00 to 9.00 in the Florida Peninsula, and 4.00 to 6.00 in the valley of the Rio Grande and on the coast of the South Atlantic States, Oregon, and Washington; it was

least, viz: 0.00 in Nevada, southern Florida, and western Arizona.

The diurnal variation is shown by Table XII, which gives the total precipitation for each hour of seventy-fifth meridian time, as deduced from self-registering gauges kept at about 43 regular stations of the Weather Bureau; of these 37 are float gauges and 7 are weighing gauges.

The normal precipitation for each month is shown in the Atlas of Bulletin C, entitled "Rainfall and Snow of the United States, compiled to the end of 1891, with annual, seasonal, monthly, and other charts."

The current departures from the normal precipitation are given in Table I, which shows that there was an excess in northern California, Oregon, Alberta, and portions of adjacent States. Elsewhere there was a general deficiency, and especially in eastern Texas, the Gulf, and Atlantic States.

The large excesses were: Indianapolis, 4.6; Sault Ste Marie, 2.9; Nashville, 2.7; Baltimore, 2.2. Deficits: Corpus Christi, 5.5; Galveston, 5.2; Cape Henry, 4.8; Kittyhawk and Norfolk, 4.7; Pensacola, 4.2; Port Eads, 4.1.

The years of greatest and least precipitation for September are given in the REVIEW for September, 1894. The precipitation for the current month was the greatest on record at: Sault Ste. Marie, 7.40; Indianapolis, 7.46; Sacramento, 1.26; Eureka, 3.14. It was the least on record at: Albany, 1.80; Vineyard Haven, 1.15; Cape Henry, 0.00; Lynchburg, 0.56; Raleigh, 0.38; Charlotte, 0.33; Cincinnati, 0.49; Lexington, 0.33; Chattanooga, 1.00; Atlanta, 0.21; Vicksburg, 0.14; Dodge City, 0.06; Port Angeles, 0.35.

The average departure for each district is also given in Table I. By dividing these by the respective normals the following corresponding percentages are obtained (precipitation is in excess when the percentages of the normals exceed 100).

Above the normal: Abilene (southern Slope), 139; northern Plateau, 205; middle Pacific, 402.

Below the normal: New England, 51; Middle Atlantic, 36; South Atlantic, 54; Florida Peninsula, 92; east Gulf, 24; west Gulf, 28; Ohio Valley and Tennessee, 67; lower Lakes, 70; upper Lakes, 91; North Dakota, 53; upper Mississippi, 88; Missouri Valley, 74; northern Slope, 78; middle Slope, 36; middle Plateau, 67; north Pacific, 82; south Pacific, 23.

The total accumulated monthly departures from normal precipitation from January 1 to the end of the current month are given in the second column of the following table; the third column gives the ratio of the current accumulated precipitation to its normal value.

Districts.	Accumulated departures.	Accumulated precipitation.	Districts.	Accumulated departures.	Accumulated precipitation.
Abilene (southern Slope) ..	Inches. + 5.00	Per ct. 124	New England	Inches. - 5.30	84
Southern Plateau	+ 0.40	105	Middle Atlantic	- 7.50	79
			South Atlantic	- 2.70	24
			Florida Peninsula	- 3.30	92
			East Gulf	- 4.30	90
			West Gulf	- 5.40	84
			Ohio Valley and Tenn.	- 9.70	73
			Lower Lakes	- 7.10	73
			Upper Lakes	- 6.30	78
			North Dakota	- 0.70	96
			Upper Mississippi	- 6.50	77
			Missouri Valley	- 3.30	88
			Northern Slope	- 0.40	97
			Middle Slope	- 1.30	93
			Middle Plateau	- 1.10	87
			Northern Plateau	- 2.60	78
			North Pacific	- 1.80	95
			Middle Pacific	- 0.90	95
			South Pacific	- 2.40	80

Details as to excessive precipitation are given in Tables XIII and XIV.

The total snowfall at each station is given in Table II. Its geographical distribution is given on Chart No. VI of total

monthly snowfall. The isotherms of minimum 32° and 40° are also shown on this chart.

HAIL.

The following are the dates on which hail fell in the respective States:

Alabama, 5. Arizona, 16, 29. Arkansas, 5. California, 18. Colorado, 2, 10, 14, 15, 21, 29. Idaho, 13, 18, 19, 20. Illinois, 3, 4, 6, 15, 16, 25. Indiana, 13. Iowa, 3, 5, 6, 15, 20, 21. Kansas, 4, 6, 8, 9, 22. Maine, 14. Maryland, 9, 10, 29, 30. Massachusetts, 11. Michigan, 28. Minnesota, 5, 6, 8, 10, 17, 28. Missouri, 3, 4, 6, 28. Montana, 6, 13, 19, 20. Nebraska, 5, 20, 21, 22. Nevada, 18, 20. New Hampshire, 11, 14. New York, 7, 12, 15, 20, 30. North Dakota, 2, 21, 24. Ohio, 7, 12, 29, 30. Oklahoma, 6. Oregon, 10, 13, 19, 20. Pennsylvania, 9, 10, 30. Rhode Island, 9. South Dakota, 2, 5. Tennessee, 4, 6, 13, 16. Utah, 14, 17. Vermont, 11. Virginia, 19. Washington, 4, 16, 19. West Virginia, 9, 19. Wisconsin, 10, 15, 22, 25, 28.

SLEET.

The following are the dates on which sleet fell in the respective States:

Colorado, 21, 22. Idaho, 20, 21. Kansas, 22. Michigan, 29, 30. Minnesota, 28, 29. Montana, 19, 20. Nebraska, 21. Nevada, 20. New York, 27, 30. Ohio, 30. Pennsylvania, 30. Utah, 21.

WIND.

The prevailing winds for September, 1895, viz, those that were recorded most frequently, are shown in Table I for the regular Weather Bureau stations.

The resultant winds, as deduced from the personal observations made at 8 a. m. and 8 p. m., are given in Table IX. These latter resultants are also shown graphically on Chart II, where the small figure attached to each arrow shows the number of hours that this resultant prevailed, on the assumption that each of the morning and evening observations represents one hour's duration of a uniform wind of average velocity. These figures indicate the relative extent to which winds from different directions counterbalanced each other.

HIGH WINDS.

Maximum wind velocities of 50 miles or more per hour were reported at regular stations of the Weather Bureau as follows (maximum velocities are averages for five minutes; extreme velocities are gusts of shorter duration, and are not given in this table):

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
		Miles				Miles	
Amarillo, Tex	21	52	s.	Oklahoma, Okla.	6	52	n.
Do.	23	50	n.	Pierre, S. Dak.	19	52	w.
Chicago, Ill.	4	53	n.	St. Paul, Minn.	6	55	sw.
Do.	23	50	s.	Tatoosh Island, Wash. ..	19	53	nw.
Huron, S. Dak.	5	61	se.	Williston, N. Dak.	24	52	w.
Marquette, Mich.	5	52	se.	Winnemucca, Nev.	11	50	sw.

SUNSHINE AND CLOUDINESS.

The quantity of sunshine, and therefore of heat, received by the atmosphere as a whole is very nearly constant from year to year, but the proportion received by the surface of the earth depends largely upon the absorption by the atmosphere, and varies with the distribution of cloudiness. The sunshine is now recorded automatically at 15 regular stations of the Weather Bureau by its photographic, and at 22 by its thermal effects. At one station records are kept by both methods. The photographic record sheets show the ap-

parent solar time, but the thermometric sheets show seventy-fifth meridian time. For convenience the results are all given in Table XI for each hour of mean local time. The cloudiness is determined by numerous personal observations at all stations during the daytime, and is given in the column of "average cloudiness" in Table I; its complement or clear sky is given in the last column of Table XI.

COMPARISON OF SUNSHINE AND CLEAR SKY.

The sunshine registers give the duration of direct sunshine whence the percentage of possible sunshine is derived; the observer's personal estimates give the percentage of area of clear sky. These numbers have been brought together, side by side, in the following table, from which it appears that, in general, the instrumental record of percentage of duration of sunshine is almost always larger than the observers' personal estimate of percentage of area of clear sky; the average excess for September, 1895, is 8 per cent for photographic records, and 11 per cent for thermometric records. The details are shown in the following table:

Difference between instrumental and personal observations of sunshine.

Photographic stations.	Instrumental.	Personal.	Difference.	Thermometric stations.	Instrumental.	Personal.	Difference.
Denver, Colo.	80	74	15	Vicksburg, Miss.	90	84	14
Phoenix, Ariz.	88	73	15	Chicago, Ill.	71	71	15
Santa Fe, N. Mex.	88	73	15	Cincinnati, Ohio.	67	67	19
Dodge City, Kans.	84	77	7	Des Moines, Iowa.	67	67	17
Kansas City, Mo.	83	73	10	New Orleans, La.	83	83	0
San Diego, Cal.	77	72	5	St. Louis, Mo.	86	86	16
Washington, D. C.	76	67	9	Philadelphia, Pa.	81	81	19
Galveston, Tex.	75	67	8	Little Rock, Ark.	61	61	19
Salt Lake City, Utah*. ..	55	55	0	Baltimore, Md.	73	73	5
Savannah, Ga.	67	67	8	Louisville, Ky.	72	72	14
Bismarck, N. Dak.	56	56	0	Wilmington, N. C.	75	75	1
Cleveland, Ohio.	58	50	8	Detroit, Mich.	61	61	12
Eastport, Me.	58	48	10	Atlanta, Ga.	74	74	2
Helena, Mont.	57	58	-1	New York, N. Y.	88	88	6
Portland, Oreg. †.	48	44	4	Portland, Me.	55	55	14
				Boston, Mass.	57	57	11
				Rochester, N. Y.	58	58	9
				San Francisco, Cal.	60	60	3
				Columbus, Ohio.	61	48	13
				Buffalo, N. Y.	59	46	13
				Marquette, Mich.	59	41	18
				Portland, Oreg. †.	44	44	0

* No thermometric report.

† Records kept by both methods.

ATMOSPHERIC ELECTRICITY.

Numerical statistics relative to auroras and thunderstorms are given in Table X, which shows the number of stations from which meteorological reports were received, and the number of such stations reporting thunderstorms (T) and auroras (A) in each State and on each day of the month, respectively.

The dates on which reports of thunderstorms for the whole country were most numerous were: 12th, 143; 15th, 127; 26th, 177.

Thunderstorm reports were most numerous in: Florida, 156; Illinois, 143; Massachusetts, 126; Minnesota, 136; Ohio, 173.

Thunderstorms were most frequent in: Florida, 25 days; Louisiana, Michigan, and Minnesota, 22; Illinois, 20.

Auroras.—The evenings on which bright moonlight must have interfered with observations of faint auroras are assumed to be the four preceding and following the date of full moon, viz, from the 1st to the 7th, inclusive, and also the 29th and 30th. On the remaining twenty-one days of the month 200 reports were received, or an average of about ten per day. The dates on which the reported number especially exceeded this average were: 14th, 31; 15th, 34; 16th, 44; 17th, 43; and 29th, 28.

Auroras were reported by a large percentage of observers